

FIG. 4.—A. Cylindrical burrows from lithofacies A ( $\times 67$ ) UCLA Geology Dept. Cat. No. 38550. B. Escape structure (left) and *Skolithos* (right) from lithofacies D ( $\times 1$ ) UCLA Geology Dept. Cat. No. 38556.

The top of lithofacies B is covered with coalescing and branching linear structures 3 to 6 cm wide. The grain size of the sandstone composing the structures is the same as that of the surrounding rock, but the cement is almost all silica with only minor amounts of dolomite; this contrasts strongly with the predominantly dolomitic cement in the rest of the lithofacies. It is impossible to determine whether or not there is a biological basis for the difference in cement. The pattern formed on the bedding surface resembles, however, the texture caused by the burrowing of crabs in modern intertidal sediments (Fig. 5a); decapod crustaceans such as thalassinid shrimp (Dörjes and Hertweck, 1975, p. 476) and the crab *Goneplax* (Rice and Chapman, 1971) also form comparable horizontal burrow networks in subtidal sediments. The forms in lithofacies B

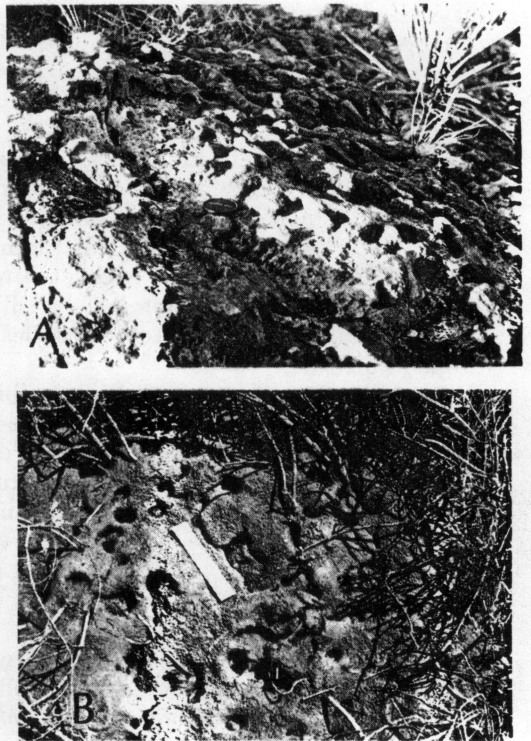


FIG. 5.—B. Crab burrows in modern intertidal sediments, Mugu Lagoon, California. Six-inch ruler for scale. A. Possible arthropod burrows on top of lithofacies B. Lens cover in center for scale.

resemble both the Eocene concretionary structures which Stanton and Warme (1971, p. 8) interpret as filled burrows of decapods, and the Cretaceous *Thalassinoides* (also inferred to be crustacean produced) developed on hardgrounds described by Bromley (1975). Decapod crustaceans did not appear until the Permian-Triassic (Glaessner, 1969, p. 435); perhaps other arthropods had similar burrowing habits in the Ordovician.

#### Lithofacies C

*Chondrites*.—*Chondrites* are three dimensional networks of tunnels branching out from master shafts which may or may not be open to the surface (Osgood, 1970); at the Silica Quarry a dendritic burrow with straight branches 2 to 3 mm in diameter (Fig. 6a) is a fragment of a network. Although originally considered to be marine algae (Hall, 1852, p. 18, *Buthotrephis* = *Chondrites*), *Chondrites* now is thought to result from feeding activity of sediment ingesting organisms (Simpson.